

Background

- HIV post-exposure prophylaxis (PEP) can prevent HIV if taken within 36 hours of potential exposure
- PEP has been recommended by the Centers for Disease Control and Prevention (CDC) for occupational exposures since 1998 and for non-occupational exposures since 2005
- We examined trends in PEP-related emergency department (ED) visits in New York City (NYC) from 2002 to 2013

Objectives

- Examine trends in PEP-related visits in NYC EDs over time
- Identify individual- and neighborhood-level characteristics associated with PEP-related visits to NYC EDs

Methods

Study design and population

- Longitudinal analysis of NYC syndromic surveillance of ED visits
 - Covered between 30 and 51 hospitals, 2002-2013
- Included all NYC ED patients aged 13-64 years old

Data collection

- Data collected included patient age, sex, residential ZIP code, and chief complaint
- PEP-related visits were identified by chief complaint keyword scan
 - HIV or 'HUMAN IMMUNOD' plus ≥1 of: 'PROPHY', 'POST EXPOSURE', 'PEP', 'EXPOSURE', 'EXPOSED', 'NEEDLE', 'BLOOD', 'FLUID', 'RAPE', 'SEXUAL ASSAULT', 'V01.6', 'Z20.2', 'V01.7', 'Z20.6', 'Z20.828', 'E920.5', 'W46'

Data analysis

- PEP-related visits calculated as a proportion of total ED visits
- Trends and associations examined using logistic regression
- Bivariable and multivariable analyses of individual- and neighborhood-level associations
 - Neighborhood: area where patient resided; defined by 42 NYC United Hospital Fund (UHF) codes
- Characteristics examined included:
 - Calendar year, continuous
 - Patient age, years: 13-29, 30-64
 - Patient sex: male, female
 - Neighborhood of residence poverty rate, dichotomized:
 - High: ≥20% of residents below federal poverty level (FPL)
 - Low: <20% below FPL
 - Neighborhood of residence annual HIV diagnosis rate, dichotomized:
 - High: top quartile
 - Low: lower three quartiles
- Multivariable model included:
 - All variables significant (p<0.05) in bivariable analyses
 - Significant interaction terms with calendar year

Total PEP-related visits

We identified 2,162 PEP-related visits in NYC EDs monitored by syndromic surveillance, 2002-2013

Trend in PEP-related visits

Proportion of PEP-related visits increased from 4 per 100,000 in 2002 to 13 per 100,000 in 2013 (p<0.0001) (Figure 1, Total)

Bivariable analyses (Table 1)

PEP-related visits were significantly associated with all characteristics examined

Multivariable analysis (Table 2)

- PEP-related visits were associated with neighborhood poverty rate and HIV diagnosis rate; highest in Chelsea-Clinton (Figure 2)
- Significant interaction with calendar year for both age and sex
 - Stronger association with male sex and younger age over time
 - Increases in PEP-related visits in males only (Figure 1)

Table 1. Descriptive and bivariable analysis of associations with PEP-related ED visits, NYC, 2002 - 2013

Characteristic	PEP-related visits, n	Total ED visits, n	PEP visits per 100,000	OR (95% CI)
Sex				
Male	1581	11,904,306	13.3	3.4 (3.1-3.7)
Female	581	14,879,931	3.9	Reference
Age, years				
13-29	988	9,870,463	10.0	1.4 (1.3-1.6)
30-64	1174	16,913,774	6.9	Reference
Neighborhood of residence poverty rate				
Low	1157	11,883,426	9.7	1.4 (1.3-1.6)
High	1005	14,900,811	6.7	Reference
Neighborhood of residence HIV diagnosis rate				
High	895	9,647,745	9.3	1.3 (1.2-1.4)
Low	1267	17,136,492	7.4	Reference
Calendar year, continuous				1.13 (1.11-1.14)

Table 2. Multivariable analysis of associations with PEP-related ED visits, NYC, 2002 - 2013

Characteristic	Adjusted* OR (95% CI)
Neighborhood of residence poverty rate (low vs. high)	1.8 (1.7 - 2.0)
Neighborhood of residence HIV diagnosis rate (high vs. low)	1.7 (1.6 - 1.9)
Sex (male vs. female) ^	
2002	1.6 (1.3 - 2.0)
2013	5.4 (4.6 - 6.3)
Age (13 - 29 vs. 30 - 64) ^	
2002	1.2 (0.9 - 1.4)
2013	2.0 (1.7 - 2.2)
Calendar year by sex and age (continuous) ^	
Female, ≥30 years	1.01 (0.98 - 1.04)
Female, <30 years	1.06 (1.03 - 1.09)
Male, ≥30 years	1.13 (1.11 - 1.15)
Male, <30 years	1.19 (1.16 - 1.21)

* Adjusted for all other variables in the table.

^ Interaction terms with calendar year were statistically significant for sex and age. Adjusted ORs represent differences in effect across strata.

Results

Figure 1. Proportion of PEP-related ED visits per 100,000 ED visits, by sex, NYC, 2002 - 2013

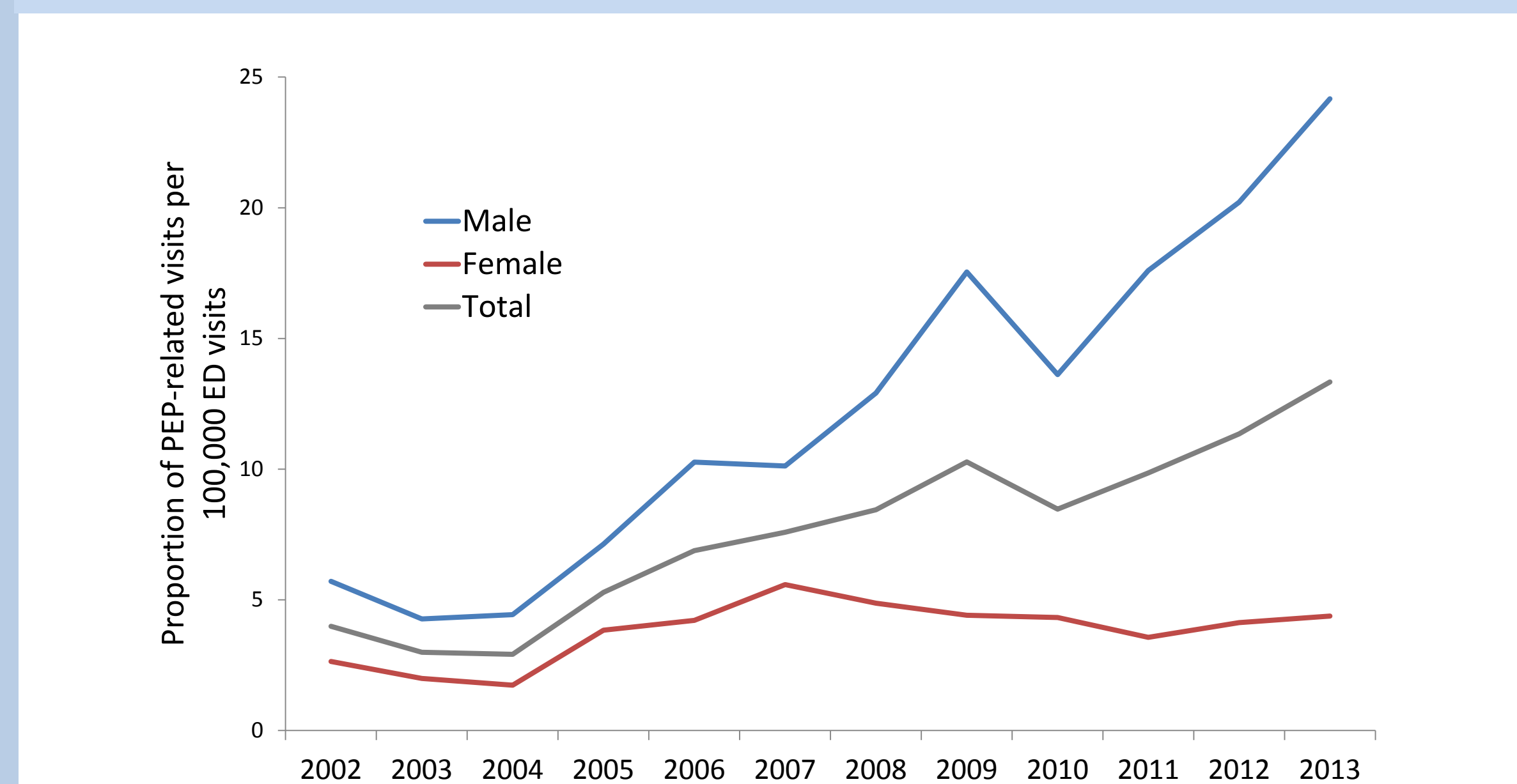
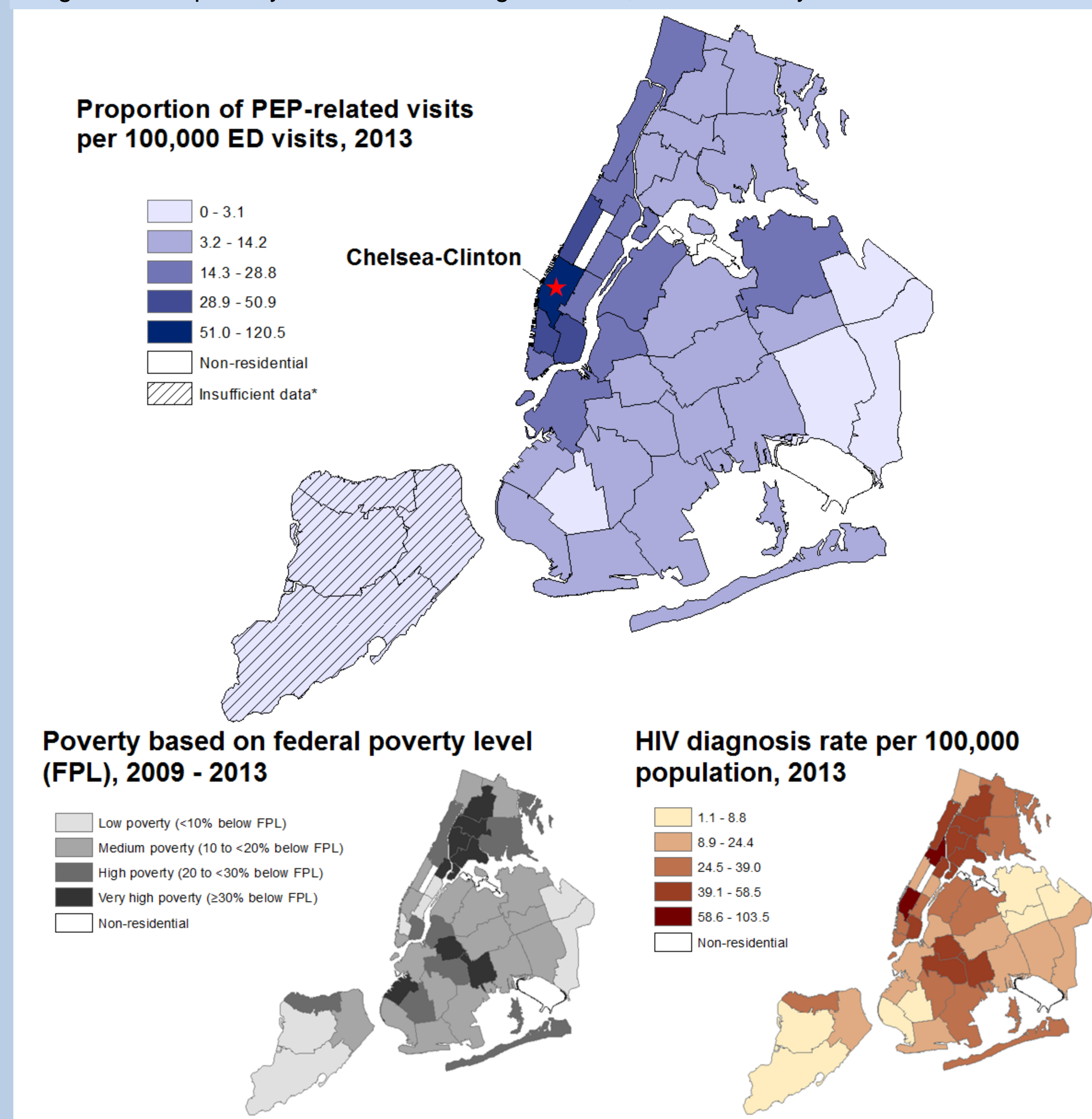


Figure 2. PEP-related ED visits by patients' neighborhood of residence compared to neighborhood poverty level and HIV diagnosis rate, New York City



*Chief complaint data in Staten Island EDs are captured for inpatients only; proportion of PEP-related ED visits may be underestimated.

Limitations

- PEP-related visits identified based on chief complaint, which could be incomplete or inaccurate
- Identified PEP-related visits, not PEP events; actual outcome/disposition of visits is unknown
- Syndromic surveillance dataset is limited
 - Visit-based; not de-duplicated by individual
 - Limited variables of interest (e.g., no data on race)
- Syndromic surveillance coverage
 - Prior to 2006 coverage increased each year but was <95%, after 2006 coverage was >95%
 - Staten Island chief complaint data was incomplete
- Trends and associations may not be generalizable to other clinical environments in NYC, or to clinics outside of NYC

Discussion

- PEP-related visits in NYC EDs increased over the past decade
- Associations with male sex and younger age grew stronger over time
 - Could indicate changes in PEP prescribing patterns, with uptake possibly increasing among a priority group: young men who have sex with men (MSM)
 - Highest rate in 2013 among residents of Chelsea-Clinton, neighborhood where many MSM live
- Associations with residence in neighborhoods with higher HIV diagnosis rates may demonstrate appropriate targeting of PEP
- Findings regarding lower proportions of PEP-related visits among patients residing in high poverty neighborhoods may highlight disparities in access
- NYC DOHMH currently supports awareness campaigns (Figure 3) and access to PEP in non-ED environments to address disparities that may impact PEP access
- Efforts are being made to leverage multiple existing data sources to track PEP-related trends citywide

Figure 3. Examples of recent NYC DOHMH materials for potential PEP prescribers (left) and patients (right)

